REMARKS

Claims 1-5 are pending in the instant application. Claims 4 and 5 have been withdrawn from consideration and canceled. Claims 1-3 have been rejected. Claims 1-3 have been amended. No new matter has been added by this amendment. Reconsideration is respectfully requested in light of the following remarks.

I. Election/Restriction Requirement Under 35 U.S.C. §121

The restriction requirement placing the instant claims into Groups I-III has been deemed proper and made final. Claims 4 and 5 have been withdrawn from further consideration. Accordingly, Applicants are canceling claims 4 and 5 without prejudice, reserving the right to file continuing applications for the canceled subject matter.

II. Rejection of Claims Under 35 U.S.C. §102/§103

Claim 1 has been rejected under 35 U.S.C. 102(a) as being anticipated by Caenepeel (US 2005/0125852 A1) with a 102(e) date of 5/9/2003. It is suggested that this reference teaches that lipid kinases such as PIPK's share minimal primary sequence similarity with three residues conserved among these enzymes including Lys-72 which binds the gamma phosphate of ATP, and Asp-166 which is part of the HRDLK motif. The Examiner suggests that all of the features of claim 1 are taught by Caenepeel for the same function as claimed. Regarding the requirement that the method is performed in the presence of at least one selected protein, this reads on the kinase which is a selected protein.

Claims 2-3 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Caenepeel in view of Schaller ((2001) *Biochimica et Biophysica Acta* 1540(1):1-21). It is suggested that while the instant claims differ from Caenepeel in that they specify the selected protein is Src and FAK, Schaller teaches the relationship between FAK and Src where some residues are sites of phosphorylation by Src and some by FAK. The Examiner suggests that these observations suggest that cell adhesion-dependent tyrosine phosphorylation of FAK occurs in two phases, with and without Src. It is suggested that it would have been obvious to one of ordinary skill in the art at the time the invention was made to identify an agent that modulates PIPKIgamma661 as taught by Caenepeel with agents that modulate Src and FAK because Schaller teaches each of these enzymes participate in the same pathway and have related cellular functions. The Examiner suggests that a compound that modulates either of Src or FAK would be expected to modulate PIPKIgamma661 as well because all are involved in regulating cell migration. Applicants respectfully traverse these rejections under 35 U.S.C. 102(a) and 103(a).

Caenepeel disclose 114 mammalian *protein* kinases and *protein* kinase-like enzymes and assay methods using the same. In contrast, Applicants disclose a screening method employing *phosphatidylinositol phosphate* kinase isoform γ661 (PIPKIγ) containing the 26-amino-acid carboxy-terminal extension of PTDERSWVYSPLHYSARPASDGESDT. Of the 114 amino acid sequences disclosed by Caenepeel in Figure 2, nowhere do Applicants find a *phosphatidylinositol phosphate* kinase isoform with an amino acid sequence of PIPKIγ661. Accordingly, in an earnest effort to

clarify the nature of the instant kinase being assayed, Applicants have amended claim 1 to indicate that "PIPKIγ" represents Type 1 Phosphatidylinositol Phosphate Kinase Isoform γ661. Support for this amendment is found at page 2, lines 8-10.

Further, Applicants respectfully disagree with the Examiners interpretation of the "selected protein" reading on the kinase. Claim 1 clearly recites the individual method step of "contacting PIPKIγ661 with a test agent in the presence of at least one selected protein." This step reads on combining three separate components. When viewed in light of the specification which teaches that the selected protein can be talin (see page 17, lines 15-16), and claims 2 and 3 which indicate that the selected protein is Src and FAK, the claimed selected protein clearly does not read on the PIPKIγ661 kinase.

In any event, Caenepeel is not a proper prior art reference under 35 U.S.C. 102(a), because prior to the effective date of this reference, Applicants were actively reducing to practice the present invention. Applicants submit herewith a Rule 131 Declaration by Applicant, Richard A. Anderson, which indicates that prior to the effective date of Caenepeel, Applicants were carrying out experiments concerning the instant invention. In particular, in the manuscript entitled "Type 1γ Phosphatidylinositol Phosphate Kinase Targets and Regulates Focal Adhesions" submitted to the journal *Nature* on June 2, 2002 (see page 93, first column, last line of Methods section), Applicants analyzed the binding of talin with PIPKIγ661 in the presence of an antibody during immunoprecipitation experiments (see page 90, third full paragraph of column 1). Thus, Applicants had reduced

to practice the method steps of contacting PIPKIγ661 with a test agent (*i.e.*, an antibody) in the presence of at least one selected protein (*i.e.* talin) and detecting the activity of PIPKIγ661 (*i.e.*, binding of talin to PIPKγ661) prior to the effective date of the Caenepeel. Accordingly, in addition to failing to teach or suggest a Phosphatidylinositol Phosphate Kinase Isoform γ661 used in a screening assay, Caenepeel is not a proper prior art reference under 35 U.S.C. 102(a) or 103(a), as the present invention was invented prior to the effective date of Caenepeel. In so far as Schaller teaches FAK and Src as important components of the integrin-dependent signaling pathway, this reference also fails to make the present invention obvious because this reference does not teach or suggest PIPKIγ661 in a screening assay. It is therefore respectfully requested that the rejections of claim 1 under 35 U.S.C. 102(a) and claims 2-3 under 35 U.S.C. 103(a) be reconsidered and withdrawn.

III. Rejection of Claims Under 35 U.S.C. §112

Claims 1-3 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. It is suggested that the claim are directed to identifying agents that modulate the activity of PIPKIγ661 and the specification contemplates this in Figure 2. The Examiner suggests that there is no clearly disclosed data of specific agents that have been identified by the claimed methods. Applicants respectfully traverse this rejection.

Applicants respectfully believe that this is an improper rejection. Claims pending in this case are drawn to *screening*

methods for identifying agents that modulate the activity of PIPKIγ661. The point of a screening assay is to use a defined end-point to identify useful compounds from a library of compounds. In this regard, Applicants provide the end-points of binding to talin (see page 17, lines 13-15) and phosphorylation of PIPKIγ661 in the presence of Src or Src and FAK. Using the disclosed assay Applicants have in fact demonstrated that FAK is a stimulatory molecule which enhances the association of Src with PIPKIγ661. See page 11, lines 4-6. As such, Applicants have enabled the claimed assay as required under 35 U.S.C. 112, first paragraph. It is therefore respectfully requested that this rejection be reconsidered and withdrawn.

Claims 1-3 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, it is suggested that each of the claimed acronyms be spelled out. Further, it is suggested that "the activity" recited in claim 1, line 2, lacks antecedent basis and the term "selected protein" does not recite how it was selected or for what. Moreover, the Examiner suggests that it is unclear in claim 3 if both Src and FAK are intended where the agent necessarily modulates the activity of FAK.

To facilitate the prosecution of this application, Applicants have amended the claims to spell out the recited acronyms. Support for the acronym PIPKIγ661 is found at lines 8-10 of page 2, and support for that acronym FAK is found at lines 10-11 of page 5 (FAK). As evidenced by the teachings of Schaller et al. (PTO 1449 Reference BV), Src kinase is the art-accepted name of the Src protein of claims 2 and 3. Accordingly, in the

earnest effort to clarify the claimed Src protein, Applicants have amended claims 2 and 3 to recite "Src kinase" as supported by the disclosure at page 10 (lines 3-17). Claim 1 has also been amended to state the method step of "detecting an activity of PIPKIγ661".

Regarding the term "selected protein", Applicants respectfully believe that, like any term used in a claim, meaning is interpreted in light of the specification. In this regard, lines 6-20 at page 17 clearly teach that the selected protein is dependent upon the assay end-point (*i.e.*, binding interaction of PIPKIγ661 with talin or phosphorylation of PIPKIγ661 by Src). Accordingly, selection of talin, Src, or Src and FAK is based upon the assay being carried out as determined by the skilled artisan performing the assay. As such, the meaning of the term "selected protein" would be immediately apparent to the skilled artisan from the teachings of the instant specification.

Regarding the Examiner's suggestion that it is unclear if both Src and FAK are intended where the agent necessarily modulates the activity of FAK, Applicants have amended claim 3 to recite that "the selected protein is Src kinase and Focal Adhesion-Associated Kinase (FAK), wherein the agent modulates the activity of FAK." As such, the claim reads on both proteins being included in the screening assay, with modulation of FAK activity.

In light of the amendments to the claims and accompanying remarks, it is respectfully requested that the rejection of the claims under 35 U.S.C. 112, second paragraph, be reconsidered and withdrawn.

IV. Objection to the Title of the Invention

The Examiner suggests that title of the invention is not descriptive. Applicants have amended the title to be consistent with that which is claimed, namely "A method for identifying an agent that modulates Type 1 phosphatidylinositol phosphate kinase isoform γ661 activity".

V. Conclusion

Applicants believe that the foregoing comprises a full and complete response to the Office Action of record. Accordingly, favorable reconsideration and subsequent allowance of the pending claims is earnestly solicited.

Respectfully submitted,

Jane Massey Licata
Registration No. 32,257

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Licata & Tyrrell P.C.
66 E. Main Street
Marlton, New Jersey 08053

(856) 810-1515